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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/733,673	12/08/2000	Yoshitami Sakaguchi	JP919990237US1(13998)	2711

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EXAMINER

SHAPIRO, LEONID

ART UNIT	PAPER NUMBER
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2673

DATE MAILED: 05/05/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

8

Office Action Summary

Application No.

09/733,673

Applicant(s)

SAKAGUCHI ET AL.

Examiner

Leonid Shapiro

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

1. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Sasaki et al. (US Patent No. 6,211,849 B1).

As to claim 1, Sasaki et al. teaches a liquid crystal display device with: a crystal cell forms an image display area on substrate (See Fig.2, item 22, in description See from Col. 2, Line 50 to Col.4, Line 3); a driver for applying a voltage to liquid crystal cell based on an input video signal, wherein driver includes a plurality of driver ICs that mounted on substrate (See Figs. 2-3, items 1-3,10,23 in description See Col. 4, Lines) and a plurality of signal lines, each of the signal lines passing through each of the driver ICs in series, wherein driver ICs are cascade-

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connected in series using signal lines (See Fig. 3, items 1-3,10, in description See Col. 4, Lines 34-43).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 2, is rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki et al. as aforementioned in claim 1 in view of Zavracky et al. (US Patent No. 5,751,261).

As to claim 2, Sasaki et al. does not teach about a power feed line via metal layer of each driver IC.

Zavracky et al. shows how to implement an aluminum interconnect (See Fig. 8, items 100, 1047, 1400, in description See Col. 15, Lines 47-51). It would have been obvious to the one ordinary skill in the art in the time of invention to implement Sasaki et al. controller using Zavracky et al. approach in order to reduce size of the LCD display device.

3. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki et al. in view of Shimizu (US Patent No. 5,801,674).

As to claim 4, Sasaki et al. teaches a liquid crystal display device with: a crystal cell forms an image display area on substrate (See Fig.2, item 22, in description See from Col. 2, Line 50 to Col.4, Line 3); a driver for distributing an input video signal to a plurality of driver

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ICs chain-connected in series using a plurality of signal lines (See Figs. 2-3, items 1-3,10,23 in description See Col. 4, Lines), each of the signal lines passing through each of the driver ICs in series, and for applying a voltage to LCD cell by employing driver ICs (See Fig. 3, items 1-3,10, in description See Col. 4, Lines 34-43).

Sasaki et al. does not teach providing a masking signal from upstream driver IC to a downstream driver IC of plurality of driver ICs, wherein masking signal masks video signal to be provided by upstream IC.

Shimizu teaches teach providing a masking signal from upstream driver IC to a downstream driver IC of plurality of driver ICs, wherein masking signal masks video signal to be provided by upstream IC (See Fig. 1, items 3-6, ENABLE1-ENABLE⁶, in description See Col. 3, Lines 67-68 Col. 4, Lines 1-18). It would have been obvious to the one ordinary skill in the art in the time of invention to implement Sasaki et al. controller using Shimizu approach in order to reduce size of the LCD display device.

As to claim 5, Shimizu teaches about downstream driver applies a voltage to LC cell in accordance with input video signal after receiving masking signal from upstream driver IC (See Fig. 1, items 3-6, ENABLE1-ENABLE⁶, in description See Col. 3 ,Lines 67-68 and Col. 4, Lines 1-18).

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki et al. as aforementioned in claim 1 in view of Babcock et al. (US Patent No. 5,623,519).

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Sasaki et al. do not teach about receiving video signal consisting of serial data, and wherein video signal is synchronized based on a synchronization pattern included in the serial data.

Babcock et al. shows how to synchronize serial stream based on a synchronization pattern included in the serial data (See Fig. 1, items 410, 430, in description See Col.1, Lines 48-67 and Col.7, Lines 42-54). It would have been obvious to the one ordinary skill in the art in the time of invention to implement Babcock et al. approach in Sasaki et al. apparatus in order to reduce size and increase reliability of the LCD display device.

5. Claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki et al. as aforementioned in claim 1 in view of Zavracky et al. and further in view of Babcock et al. (US Patent No. 5,623,519).

As to claim 6, Sasaki et al. teaches a liquid crystal display device with: a crystal cell forms an image display area on substrate (See Fig.2, item 22, in description See from Col. 2, Line 50 to Col.4, Line 3); a driver for distributing an input video signal to a plurality of driver ICs that are cascade-connected (See Figs. 2-3, items 1-3,10,23 in description See Col. 4, Lines), and for applying a voltage to LCD cell by employing driver ICs (see Fig. 3, items 1-3,10, in description See Col. 4, Lines 34-43).

Sasaki et al. does not teach about the plurality of driver ICs are cascade-connected in series by a video transmission line provided on substrate.

Zavracky et al. shows to how to implement plurality of the drivers with interconnections on silicon substrate (See Fig. 1, items 122a and 122b, in description See Col. 3, Lines 1-10). It

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would have been obvious to the one ordinary skill in the art in the time of invention to implement Sasaki et al. controller using Zavracky et al. approach in order to reduce size of the LCD display device.

Sasaki et al. and Zavracky et al. do not teach about plurality of driver ICs are controlled by serial data that are transmitted along video transmission line.

Babcock et al. shows how to synchronize serial stream and control drivers based on a synchronization pattern included in the serial data (See Fig. 1, items 410, 430, in description See Col.1, Lines 48-67 and Col.7, Lines 42-54). It would have been obvious to the one ordinary skill in the art in the time of invention to implement Babcock et al. approach in Sasaki et al. and Zavracky et al. apparatus in order to reduce size and increase reliability of the LCD display device.

As to claim 7, Sasaki et al. does not teach about a second signal line for which the polarity of first signal line has been inverted. As notoriously well known in the art a line with polarity of first signal line has been inverted could be easily implemented. It would have been obvious to the one ordinary skill in the art in the time of invention to add a second signal line for which the polarity of first signal line has been inverted to Sasaki et al., Zavracky et al. and Babcock et al apparatus in order to reduce size and increase reliability of the LCD display device.

6. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki et al., Zavracky et al. and Babcock et al as aforementioned in claim 6 in view of Shin et al. (US Patent No. 5,974,464).

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Sasaki et al., Zavracky et al. and Babcock do not show driver with a clock line and power makes a cascade-connection to plurality of driver ICs.

Shin et al. shows a clock line and power makes a cascade-connection to plurality ICs (See Fig. 1, in description See Col. 4, Lines 55-67). It would have been obvious to the one ordinary skill in the art in the time of invention to implement cascade connections as shown by Shin et al. in Sasaki et al., Zavracky et al. and Babcock et al apparatus in order to reduce size and increase reliability of the LCD display device.

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki et al., Zavracky et al. and Babcock et al as aforementioned in claim 6 in view of Komarek et al. (US Patent No. 5,825,777).

Sasaki et al., Zavracky et al. and Babcock do not show a dummy circuit for substantially matching a video phase and a clock phase.

Komarek et al. teaches a dummy circuit matching operational characteristics modulating circuits (See Col. 10, Lines 7-18). It would have been obvious to the one ordinary skill in the art in the time of invention to implement dummy circuit as shown by Komarek et al. in Sasaki et al., Zavracky et al. and Babcock et al apparatus in order to reduce size and increase reliability of the LCD display device.

8. Claims 10-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu in view of Sasaki et al. in further in view of Babcock et al.

As to claim 10, Shimizu teaches about liquid crystal control with: receiver for receiving a video signal from a host to display an image (See Fig. 2, items 11, 12, 14, in description See Col.4, Lines 23-26); a sequencer (See Fig. 2, items 11, 12, 13, in description See Col.4, Lines 23-26); output control means for converting video signal received from receiver into a serial video signal (See Fig. 2, item 14).

Shimizu does not teach LCD driver comprising a plurality of driver ICs and video transmission line passing through each of the driver ICs in series, wherein driver ICs are cascade connected in series.

Sasaki et al. teaches and a plurality of signal lines, each of the signal lines passing through each of the driver ICs in series, wherein driver ICs are cascade-connected in series using signal lines (See Fig. 3, items 1-3,10, in description See Col. 4, Lines 34-43). It would have been obvious to the one ordinary skill in the art in the time of invention to implement Sasaki et al. approach in Shimizu apparatus in order to reduce size and increase reliability of the LCD display device.

Shimizu and Sasaki et al. do not show how upon the receipt of a control signal from host, generating header information for packet data that are to be output to a LCD driver, for adding header information generated by sequencer to serial video signal, and for outputting resultant serial video signal to LCD driver.

Babcock et al. shows how to synchronize serial stream and control drivers based on a synchronization pattern included in the serial data (See Fig. 1, items 410, 430, in description See Col.1, Lines 48-67 and Col.7, Lines 42-54). It would have been obvious to the one ordinary skill

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in the art in the time of invention to implement Babcock et al. approach in Shimizu Sasaki et al. apparatus in order to reduce size and increase reliability of the LCD display device.

As to claim 11, Shimizu teaches about sequencer and output means (See Fig. 2, items 13, 15, 16).

Shimizu does not teach about generation of header information synchronizing drivers, and wherein output means provide header information used for synchronization. Babcock et al. shows how to synchronize serial stream and control drivers based on a synchronization pattern included in the serial data (See Fig. 1, items 410, 430, in description See Col.1, Lines 48-67 and Col.7, Lines 42-54). It would have been obvious to the one ordinary skill in the art in the time of invention to implement Babcock et al. approach in Shimizu apparatus in order to reduce size and increase reliability of the LCD display device.

As to claims 12-13, Shimizu teaches about a video transmission method, for transmitting a video signal to an LCD driver ICs by transmitting a video signal via parallel interface, but transmit ENABLE control signal via serial interface (See Fig. 1, item ENABLE1-ENABLE4). It would have been obvious to the one ordinary skill in the art in the time of invention to implement transmission of video signal using serial interface, including a horizontal blanking period approach in Shimizu apparatus in order to reduce size and increase reliability of the LCD display device.

Shimizu does not teach LCD driver comprising a plurality of driver ICs and video transmission line passing through each of the driver ICs in series, wherein driver ICs are cascade connected in series by video transmission line.

Sasaki et al. teaches and a plurality of signal lines, each of the signal lines passing through each of the driver ICs in series, wherein driver ICs are cascade-connected in series using signal lines (See Fig. 3, items 1-3,10, in description See Col. 4, Lines 34-43). It would have been obvious to the one ordinary skill in the art in the time of invention to implement Sasaki et al. approach in Shimizu apparatus in order to reduce size and increase reliability of the LCD display device.

Shimizu and Sasaki et al. do not show how to transmit a synchronization pattern during horizontal blanking period in order to synchronize video signal for driver ICs. Babcock et al. shows how to synchronize serial stream and control drivers based on a synchronization pattern included in the serial data (See Fig. 1, items 410, 430, in description See Col.1, Lines 48-67 and Col.7, Lines 42-54). It would have been obvious to the one ordinary skill in the art in the time of invention to implement Babcock et al. approach during horizontal blanking period in Shimizu and Sasaki et al. apparatus in order to reduce size and increase reliability of the LCD display device.

As to claim 14, Shimizu teaches about a video transmission method, for transmitting a video signal to an LCD driver ICs that are cascade-connected: transmitting a video signal via parallel interface, but transmit ENABLE control signal via serial interface (See Fig. 1, item ENABLE1-ENABLE4). It would have been obvious to the ordinary skill in the art in the time of invention to implement transmission of video signal using serial interface, including a horizontal blanking period approach in Shimizu apparatus in order to reduce size and increase reliability of the LCD display device applying to an LCD a voltage based on video signal received and that is

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processed by each of driver ICs (See Fig 1, items 3, 4, 5, 6, in description See Col. 3, Lines 41-52).

Shimizu does not teach LCD driver comprising a plurality of driver ICs and video transmission line passing through each of the driver ICs in series.

Sasaki et al. teaches LCD driver comprising a plurality of driver ICs and video transmission line passing through each of the driver ICs in series (See Fig. 3, items 1-3,10, in description See Col. 4, Lines 34-43). It would have been obvious to the one ordinary skill in the art in the time of invention to implement Sasaki et al. approach in Shimizu apparatus in order to reduce size and increase reliability of the LCD display device.

Shimizu and Sasaki et al. do not teach about video signal is constituted by bit blocks having a plurality of attributes and wherein driver ICs are controlled by using bit blocks.

Babcock et al. shows how to synchronize serial stream and control drivers based on a synchronization pattern included in the serial data (See Fig. 1, items 410, 430, in description See Col.1, Lines 48-67 and Col.7, Lines 42-54). It would have been obvious to the one ordinary skill in the art in the time of invention to implement Babcock et al. approach for the bits blocks and attributes in Shimizu and Sasaki et al. apparatus in order to reduce size and increase reliability of the LCD display device.

As to claim 15, Shimizu, Sasaki et al. and Babcock et al. do not teach about wait command. It would have been obvious to the one ordinary skill in the art in the time of invention to add a wait command for waiting for driver IC, generated by each of driver IC and transmitted to a downstream (as ENABLE control line in Shimizu Fig.1) in Shimizu and

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Babcock et al. apparatus in order to reduce size and increase reliability of the LCD display device.

As to claim 16, Shimizu, Sasaki et al. and Babcock et al. do not teach about LCD driver using a packet, and wherein plurality of driver ICs are controlled by a protocol that employs the header of the packet. It would have been obvious to the one ordinary skill in the art in the time of invention to add a protocol that employs the header of the packet in Shimizu and Babcock et al. apparatus in order to reduce size and increase reliability of the LCD display device.

9. Applicant's arguments filed on 03-31-03 with respect to claim 1-16 have been considered but are moot in view of the new ground(s) of rejection.

Telephone inquire

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonid Shapiro whose telephone number is 703-305-5661. The examiner can normally be reached on 8 a.m. to 5 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on 703-305-4938. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4750.

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April 15, 2003



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